

Anatomical Knowledge Retention & Interventional Strategies in Nursing Education

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Objectives

- 1) Identify factors affecting knowledge acquisition, retention, and application
- 2) Discuss experiential learning strategies to improve knowledge retention
- 3) Design your own project to identify knowledge gaps and appropriate learning and retention strategies

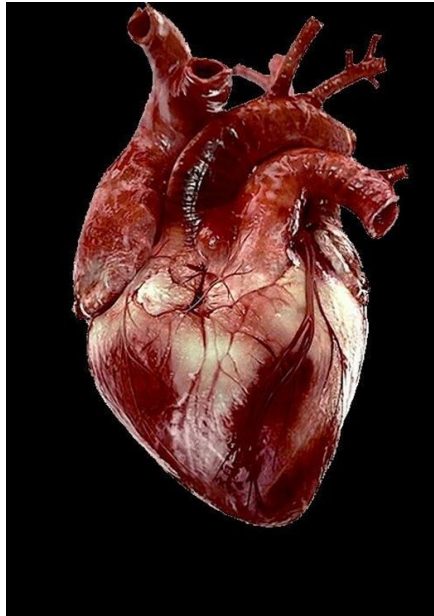


Pre-Assessment



Creating the Project

- Organize content into categories that make sense to you

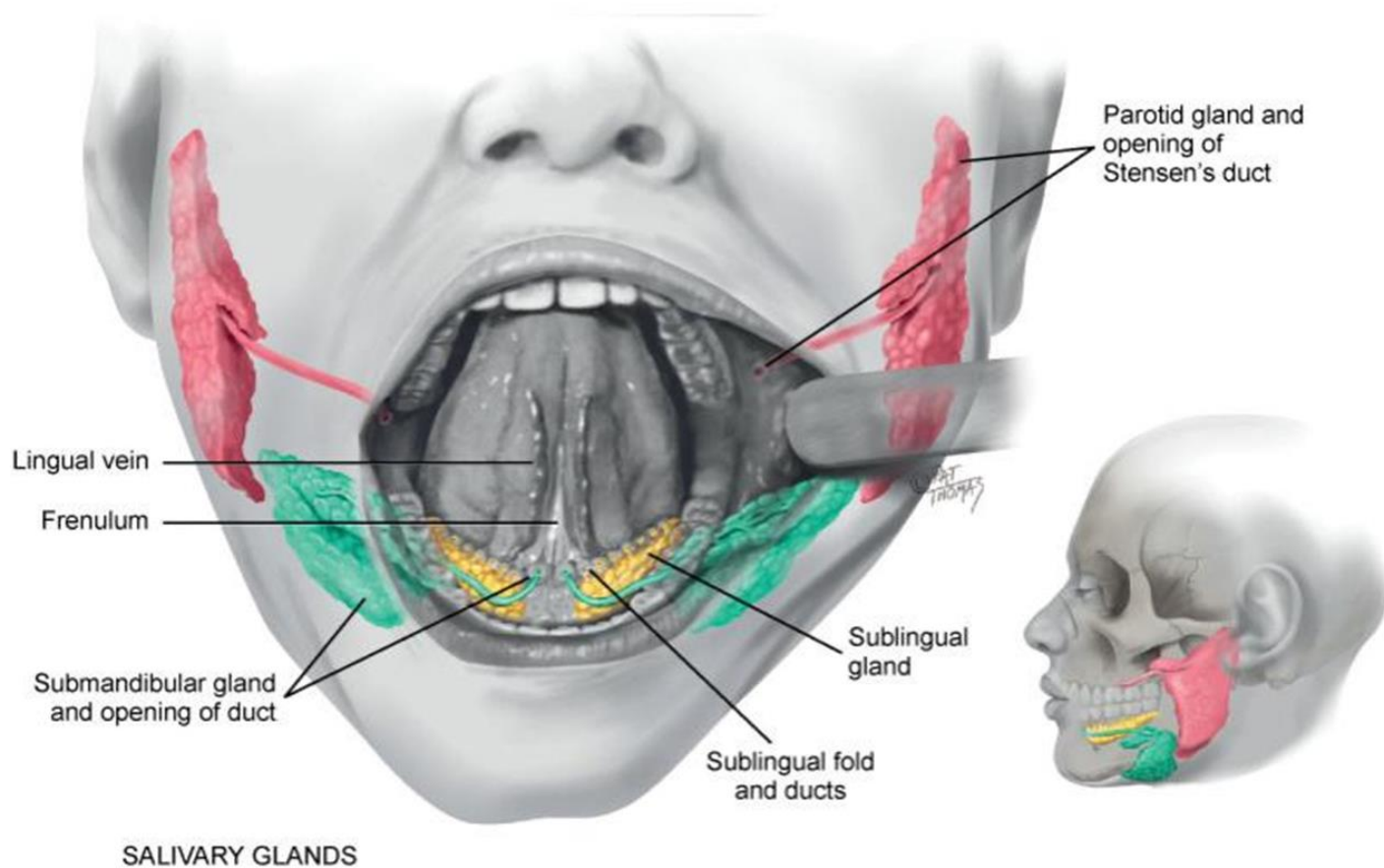


Project Design

- How do you evaluate understanding in your course?



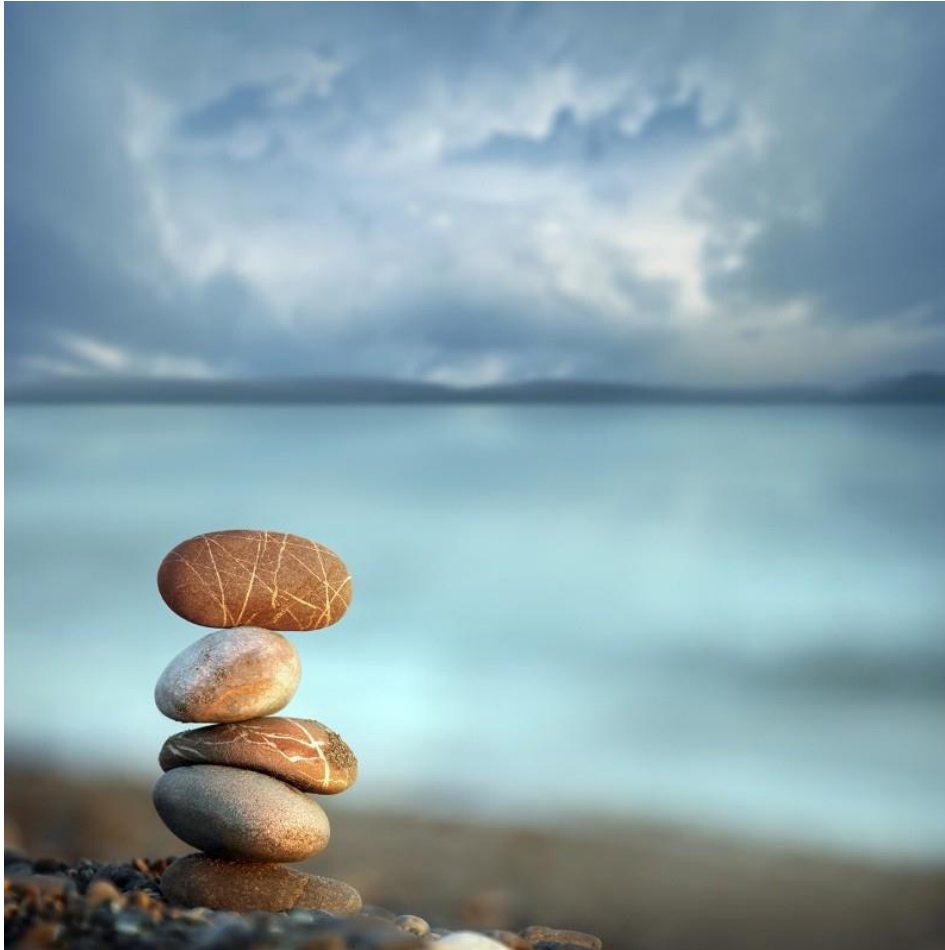
Kahoot Time!



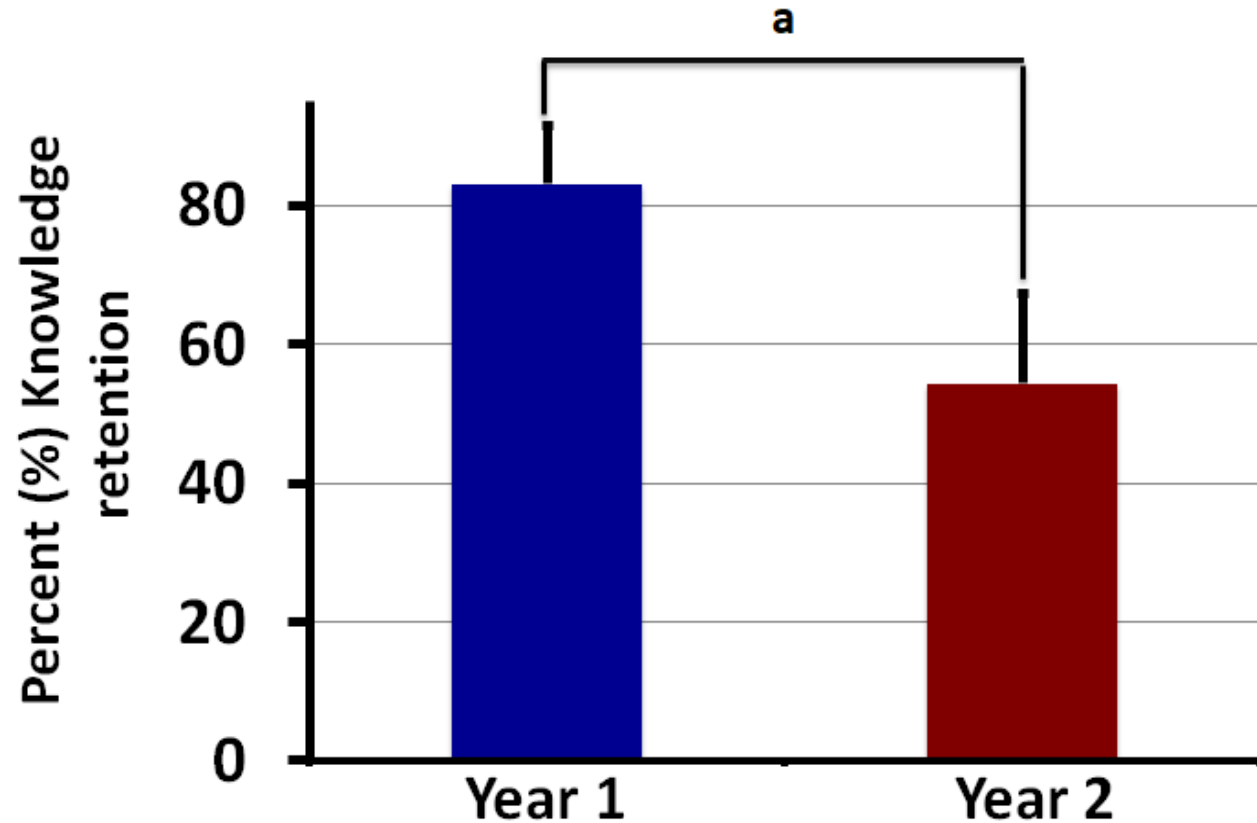
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Fig. 17-5. Salivary glands.

Results



*Knowledge
Acquisition
& Retention*



Knowledge Retention in Second-Year Nursing Students

Organ system	Year 1 Mean \pm SD	Year 2 Mean \pm SD	% Knowledge lost	P -values
Integumentary system	90.6 \pm 6.8	70.7 \pm 25.4	19.9%	.197
Head and neck lymphatic	91.4 \pm 11.7	34.02 \pm 25.6	57.4%	.001
Special Senses	88.4 \pm 6.9	67.08 \pm 22.9	20.6%	.181
Gastrointestinal	63.6 \pm 6.9	53.34 \pm 14.9	10.3%	.014
Respiratory system	72.9 \pm 5.8	61.43 \pm 22.1	11.5%	.249
Vascular system	83.5 \pm 5.4	37.39 \pm 21.4	46.1%	.003
Nervous system	83.9 \pm 8.1	58.77 \pm 19.6	25.1%	.0001
Cranial nerves	88.2 \pm 4.4	47.01 \pm 19.5	41.2%	.0001
Musculo-skeletal system	88.0 \pm 7.0	57.27 \pm 32.9	30.7%	.007
Genitourinary system	80.4 \pm 16.4	64.0 \pm 28.1	16.4%	.097

*Knowledge
Acquisition
& Retention*

Factors That Impact Learning



Student-Related Factors Impacting Teaching & Learning of Bioscience

- Inadequate time to study biosciences
- Class time & attendance
- Lab experience
- Student factors
 - Prioritization
 - Previous experience
 - Self-efficacy

Faculty-Related Factors Impacting Teaching & Learning of Bioscience

- Course organization and methods of delivery
- Instructor self-efficacy
- Teaching style and strategies

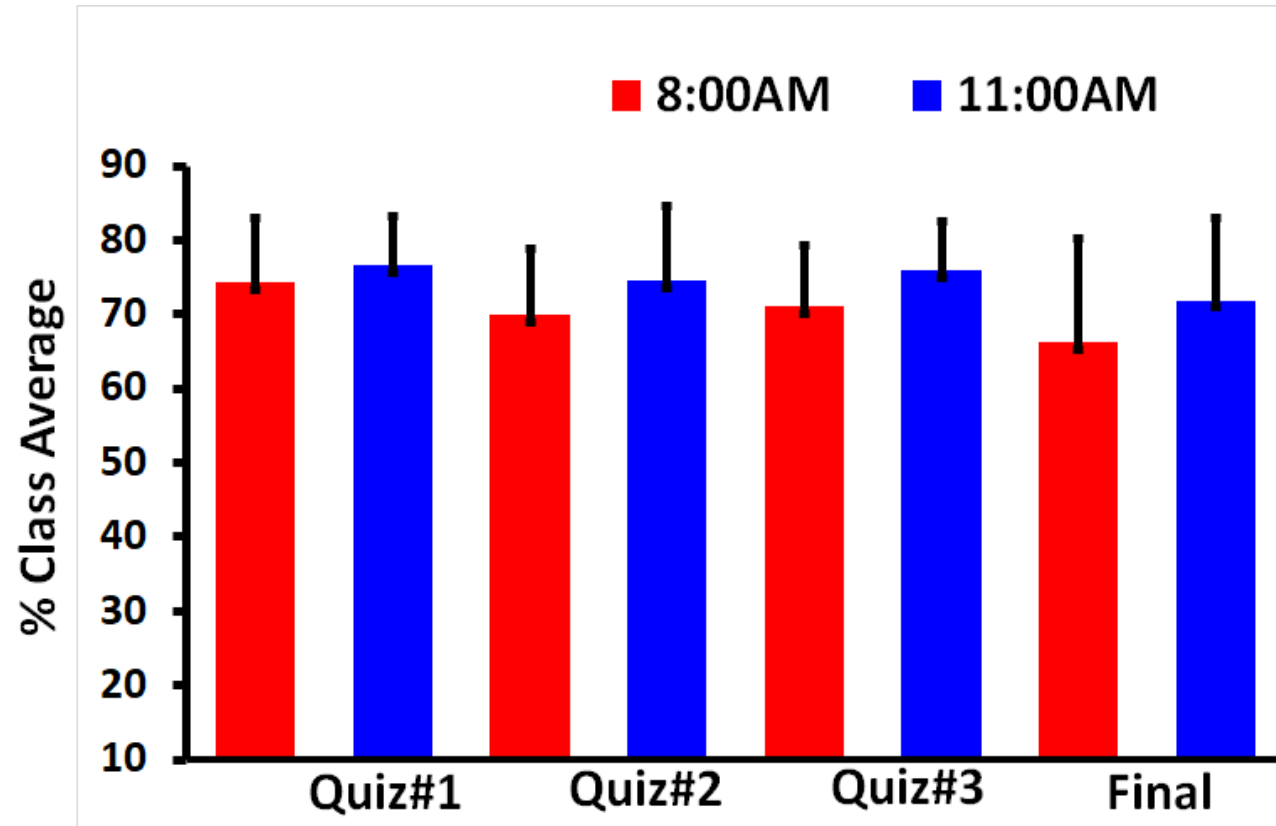
Teaching/Contact hours

Body organ system	Teaching hours
Integumentary system	1.2
Head and neck lymphatic	1.2
Special Senses	1.2
Gastrointestinal	1.2
Respiratory system	1.2
Vascular system	2.4
Nervous system and cranial nerves	1.2
Musculo-skeletal system	9.6
Lymphatic system	1.2
Genitourinary	2.4
Review	1.2
Total: 26.4	

*Factors
Impacting the
Knowledge
Acquisition &
Retention*

Class time

*Factors
Impacting the
Knowledge
Acquisition &
Retention*



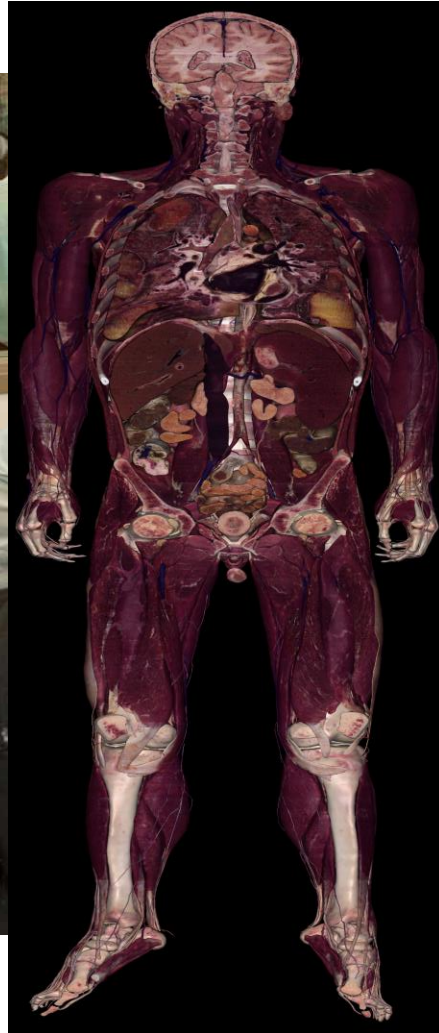
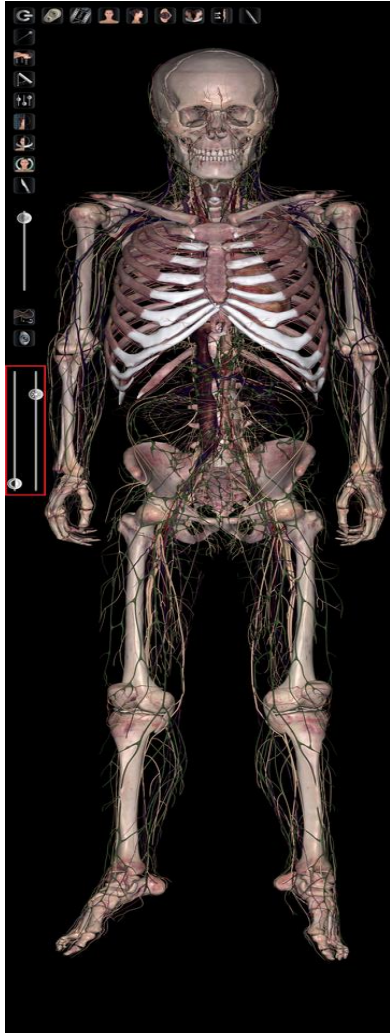
Interventional Strategies



***Interventional
Strategies in
Present Study***

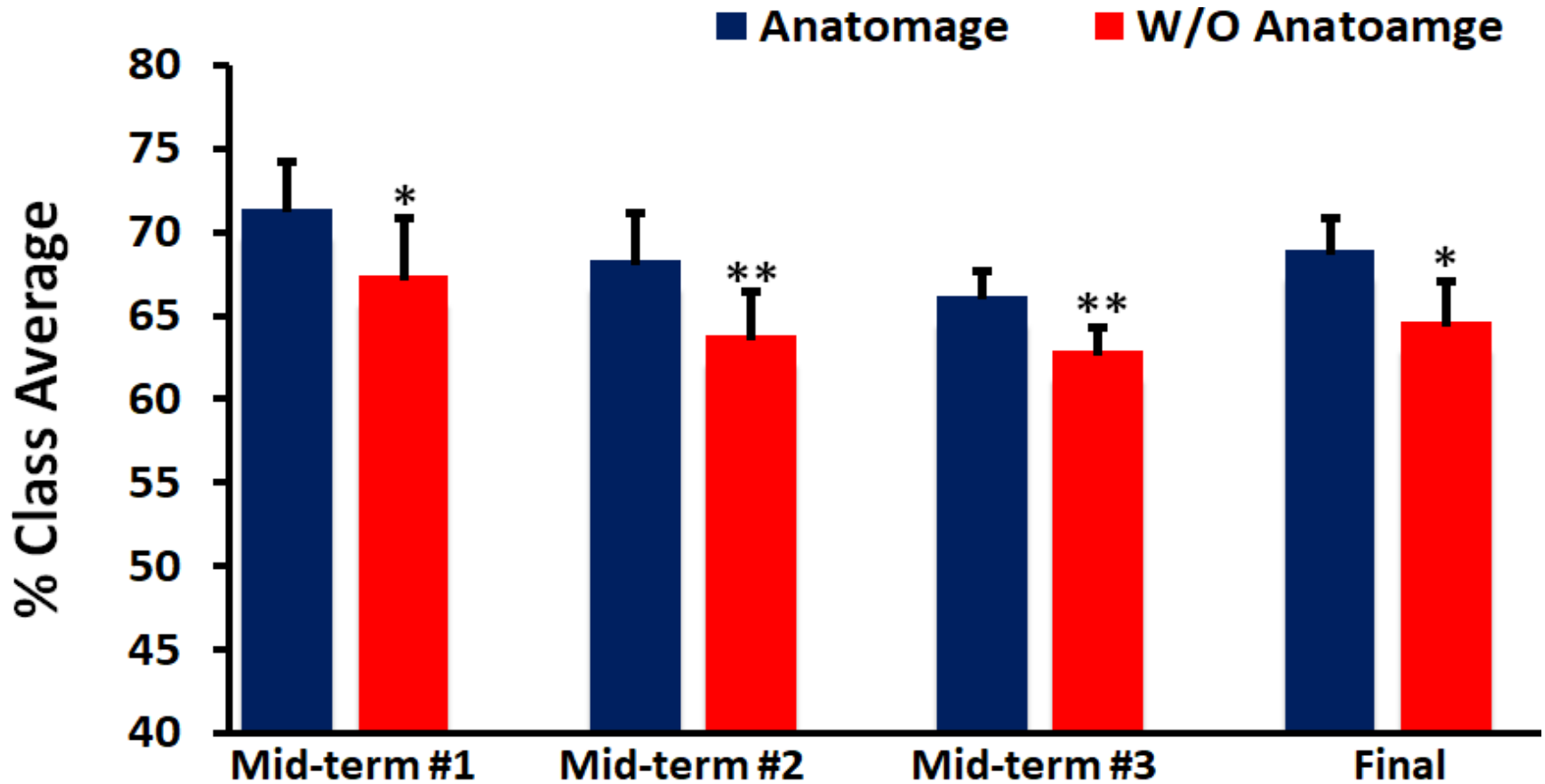
- Introduction of a Virtual Human Cadaver-Anatomage
- Inclusion of the Anatomical Images in Anatomy exams
- Content Reinforcement (On-line and In-class Activities)

3D Virtual Human Cadaver-Anatomage



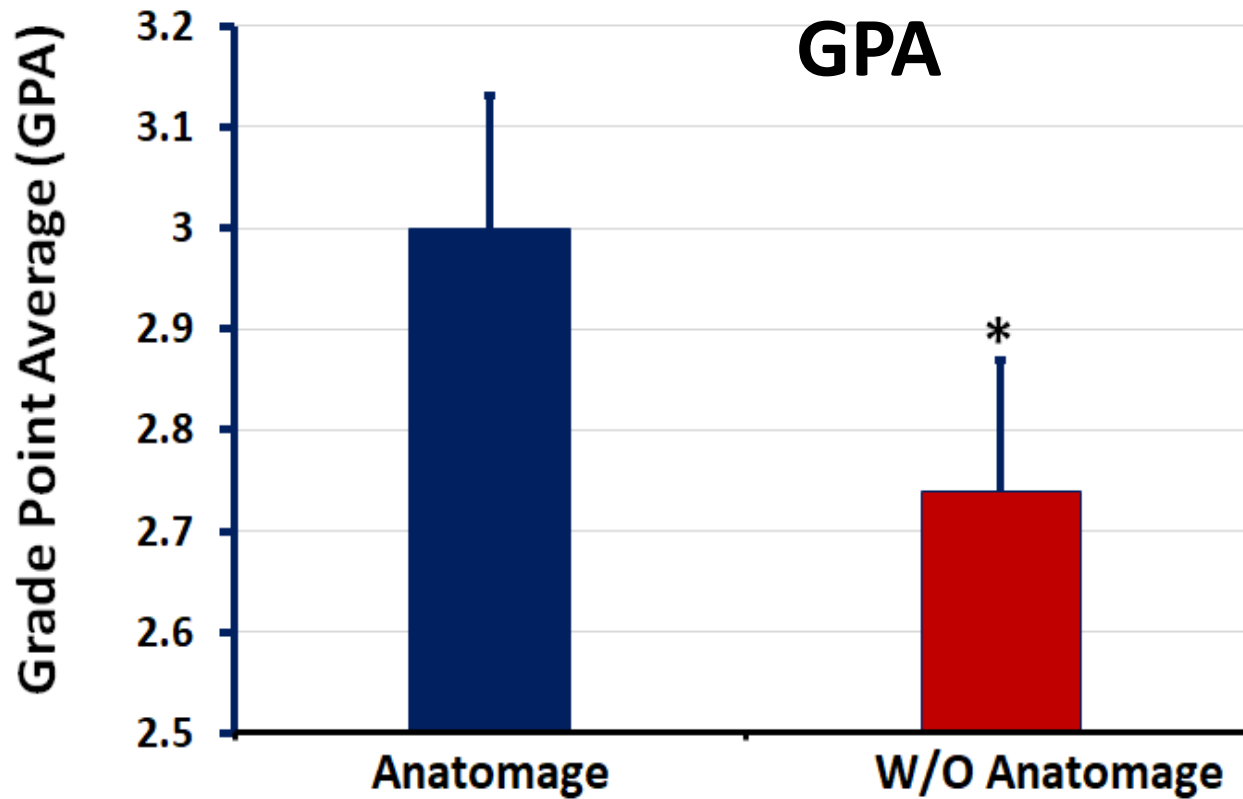
Strategy I

3D Virtual Human Cadaver- Anatomage



Strategy I

Virtual Human Cadaver-Anatomage



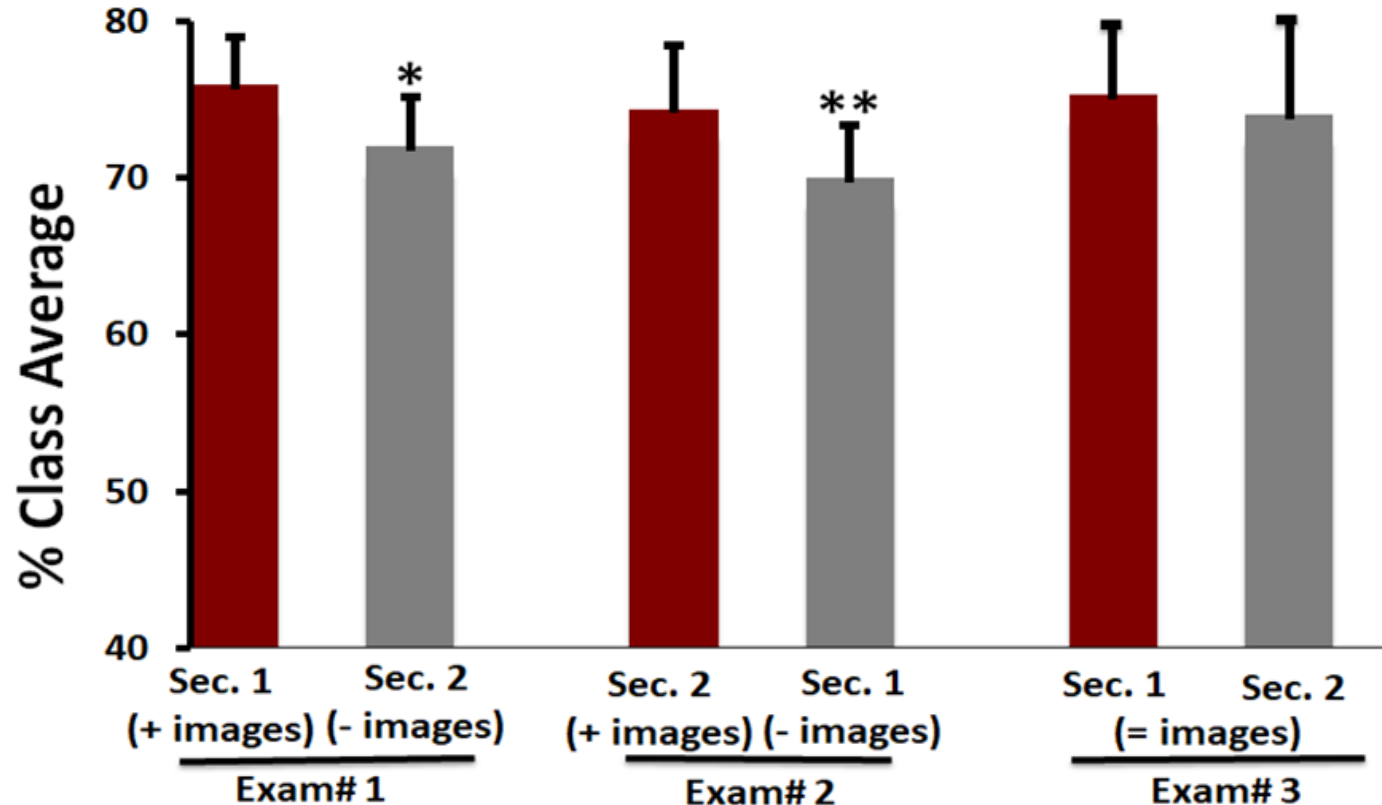
Advantages of Using Virtual Human Cadaver

Strategy I *Virtual* *Human* *Cadaver-* *Anatomage*

- Provides a true perception of the human body
- Stimulate real-life learning environments
- Provide a social hub for faculty-student interaction
- Help students to develop a social & communication skills
- Provide visualizing effects that increase learning and alter cognitive load (Custers et al., 2010)
- Help recall anatomical knowledge

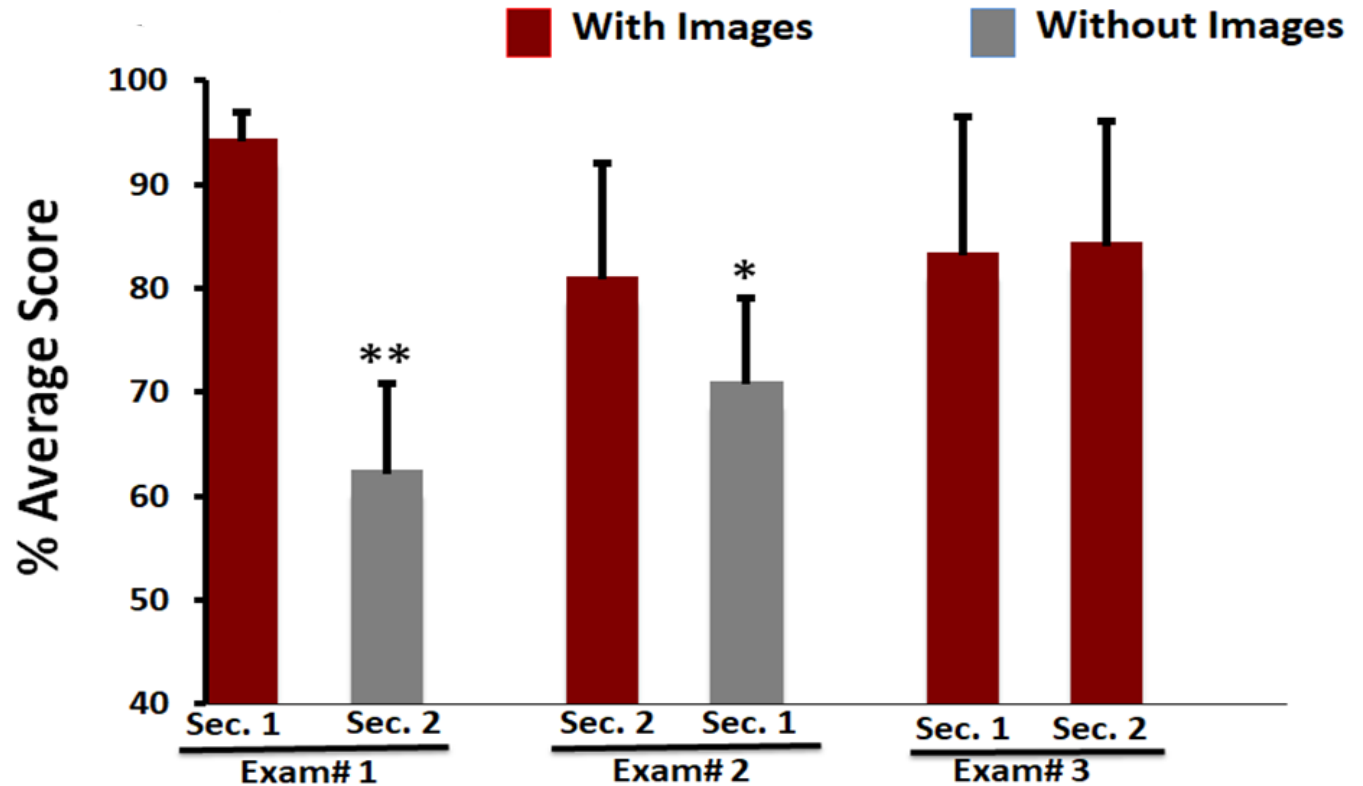
Inclusion of Images in Anatomy Exams

Strategy II Inclusion of Anatomical Images in Exams



Inclusion of Images in Anatomy Exams

Strategy II
Inclusion of
Anatomical
Images in
Exams



Advantages of Images in Exams

Strategy II
Inclusion of
Anatomical
Images in
Exams

- Increase visualization
- May reduce exam anxiety and stress in students
- Alter cognitive load (Custers et al., 2010)
- Help recall anatomical knowledge
- Provide a hint to an answer

The Impact of On-line and In-class Activities

Strategy III On-line & In-class Activities

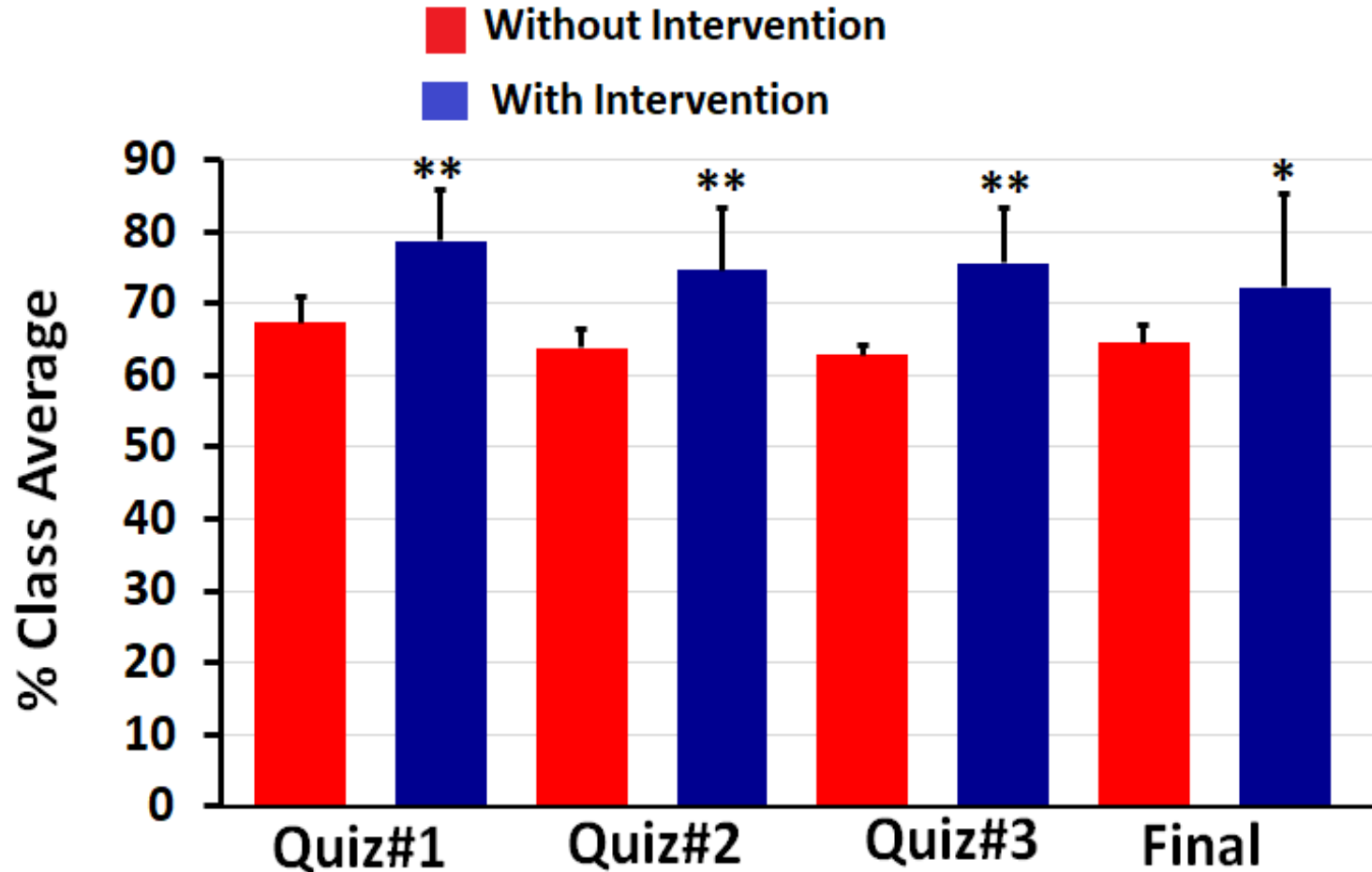
On-line Activities (outside the class):

- WileyPlus & Orion
- Muscle assignments
- Practice questions on anatomy contents

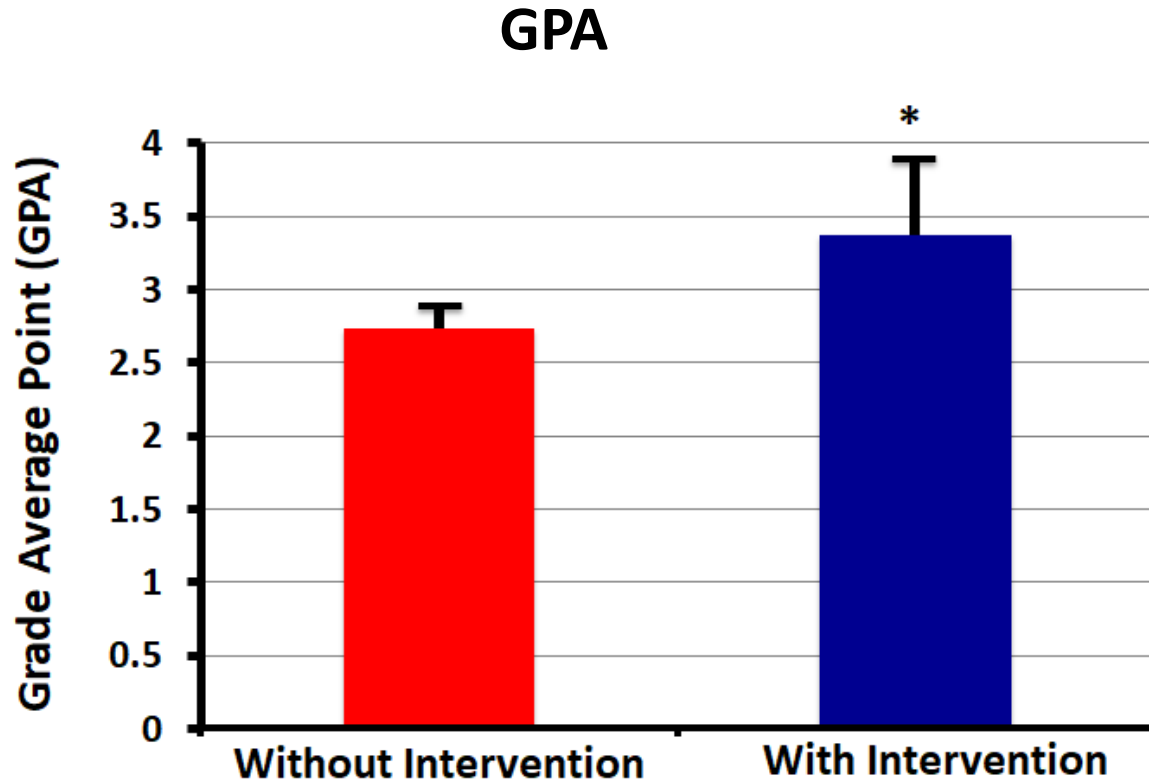
In-class Activities:

- Kahoot quizzes
- In-class quizzes, discussion & engagement
- Anatomical matching questions

*Strategy III
On-line &
In-class
Activities*



*Strategy III
On-line &
In-class
Activities*



Advantages of On-line & In-class Activities

- The academic performance (Class average & GPA)
- Help gain communication and social skills
- Promote active learning
- Improve class attendance and engagement
- Develop critical thinking
- Retain long-term anatomical knowledge

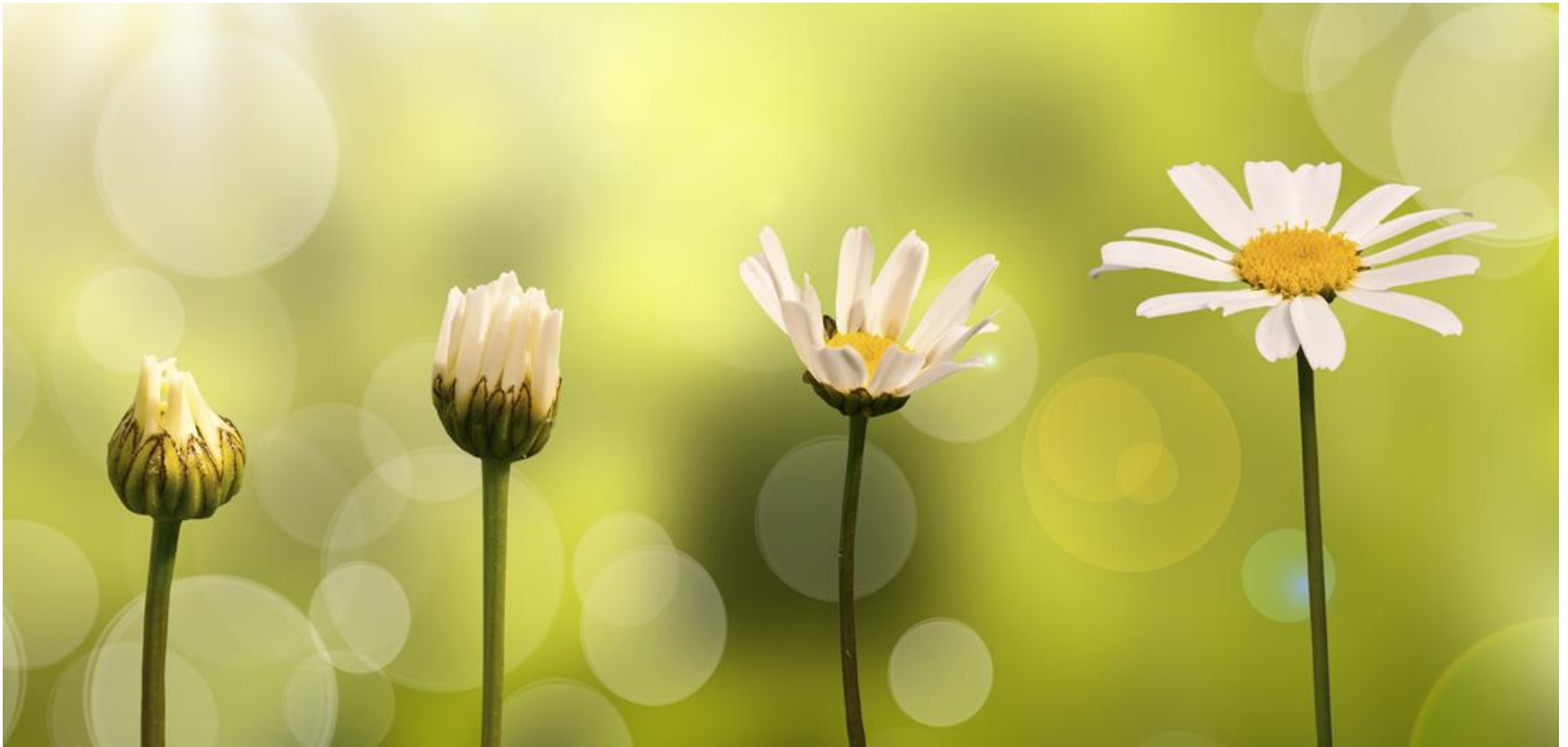
Future Directions



Post-Assessment



Conclusions



Thank you